

10/587101

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
4 August 2005 (04.08.2005)

PCT

(10) International Publication Number  
**WO 2005/070409 A1**

(51) International Patent Classification<sup>7</sup>: **A61K 31/20**,  
31/66, A61P 9/10

(21) International Application Number:  
PCT/AU2005/000071

(22) International Filing Date: 21 January 2005 (21.01.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
2004900266 21 January 2004 (21.01.2004) AU

(71) Applicant (for all designated States except US): **MED-VET SCIENCE PTY LTD** [AU/AU]; Frome Road, Adelaide, South Australia 5000 (AU).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **XIA, Pu** [AU/AU]; 97 Shakespeare Ave, Magill, South Australia 5051 (AU). **WADHAM, Carol** [AU/AU]; 47 Hillsdale Ave, Coromandel Valley, South Australia 5051 (AU). **VADAS, Mathew** [AU/AU]; 8 Branch Road, Sterling, South Australia 5152 (AU).

(74) Agents: **OBRANOVICH, Tania, D.** et al.; Davies Col-lison Cave, 1 Nicholson Street, Melbourne, Victoria 3000 (AU).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2005/070409 A1

(54) Title: A METHOD OF MODULATING PRO-INFLAMMATORY AND INFLAMMATORY ACTIVITY MEDIATED BY C-REACTIVE PROTEIN

(57) Abstract: The present invention relates generally to a method of modulating the proinflammatory activity of C-reactive protein in endothelial cells. More particularly, the present invention relates to down-regulation of proinflammatory activity of C-reactive protein in vascular endothelial cells. Accordingly, the method of the present invention is useful, inter alia, in the treatment and/or prophylaxis of inflammatory conditions, particularly conditions characterised by proinflammatory activity of C-reactive protein in endothelial cells.

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU2005/000071

A. CLASSIFICATION OF SUBJECT MATTER												
Int. Cl. <sup>7</sup> : A61K 31/20 A61K31/66 A61P 9/10												
According to International Patent Classification (IPC) or to both national classification and IPC												
B. FIELDS SEARCHED												
Minimum documentation searched (classification system followed by classification symbols) SEE BELOW												
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched SEE BELOW												
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPIDS, Medline, CAPLUS: lipoprotein, LDL, HDL, c-reactive protein, cardiovascular disease, atherosclerosis												
C. DOCUMENTS CONSIDERED TO BE RELEVANT												
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.										
X	US 2003/0171251 A1 (Pepys MB) Publication date: 11 September 2003 Paragraphs 5 to 10, 81, Examples, Table 1, Claims	1-75										
X	Pepys MB and Hirschfield GM (2001) Ital Heart J 2(3):196-199 "C-reactive protein and atherothrombosis" Abstract and p. 197-198, bridging paragraph	1-75										
X	WO 2003/097104 A1 (University College London) Publication date: 27 November 2003 p. 8, 2nd paragraph, p. 14 2nd paragraph, p. 25 2nd paragraph, Claims	1-23, 38-60 and 75										
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex												
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance ..</td> <td>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"E" earlier application or patent but published on or after the international filing date</td> <td>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td>"&amp;" document member of the same patent family</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance ..	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	"P" document published prior to the international filing date but later than the priority date claimed	
"A" document defining the general state of the art which is not considered to be of particular relevance ..	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention											
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone											
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art											
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family											
"P" document published prior to the international filing date but later than the priority date claimed												
Date of the actual completion of the international search 11 March 2005		Date of mailing of the international search report 18 MAR 2005										
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929		Authorized officer  PHILIPPA WYRDEMAN Telephone No : (02) 6283 2554										

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2005/000071

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	US 6764826 B2 (Yeh <i>et al</i> ) Published 20 July 2004 Column 2, lines 25 to 57, Examples 6 and 7 and Claims	1-8, 10-16, 21, 23, 38 to 45, 47-53, 58, 60 and 75

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2005/000071

### Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 1 to 23, 38 to 60 and 75 (all partially)  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:  
Claims 1 to 23, 38 to 60 and 75 (all partially) have all been partially searched because they are not limited to the technical feature of the invention (in accordance with PCT Rule 6.3). The technical feature of the invention as described in the specification resides in methods for modulating C-reactive protein mediated by lipoproteins, lipids and phospholipids and uses thereof.
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

### Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

#### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU2005/000071

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member			
US	2003171251				
WO	03097104	CA	2485852	EP	1503800
US	6764826	AU	75530/01	CA	2411139
		WO	0194951	US	2002142283
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.					
END OF ANNEX					